Literature Output on Wheat Research in India: A Scientometric Analysis

S. Sudhahar
Assistant Librarian, Thiagarajar College of Engineering, Madurai, Tamil Nadu, India

S. Kishore Kumar
Deputy Librarian, Alagappa University, Karaikudi, Tamil Nadu, India

OPEN ACCESS

Volume: 7

Issue: 2

Month: October

Year: 2019

P-ISSN: 2321-788X

E-ISSN: 2582-0397

Received: 19.09.2019

Accepted: 26.09.2019

Published: 01.10.2019

Citation:
Sudhahar, S., and S. Kishore Kumar. "Literature Output on Wheat Research in India: A Scientometric Analysis." *Shanlax International Journal of Arts, Science and Humanities,* vol. 7, no. 2, 2019, pp. 83–88.

DOI:
https://doi.org/10.34293/sijash.v7i2.824

Abstract
This study analyses the research output on Wheat research during the period of 2001-2016 and the analyses included research growth, rank, LCS, GCS. It also analysis that the characteristics of most productive institutions, authors and high-cited papers. This study was conducted using data from the Web of science database over the time period of 2001-2016.
Keywords: Wheat, Authorship Pattern, Gender Wise Distribution, Distribution of Authors, Subject Wise Distributions.

Introduction

Wheat has been cultivated for several thousand years in India. Wheat grains have been found in the Mohenjadaro excavations. These have been identified as belonging to Triticum aestivum sub-species sphaerococcum, characterized by spherical shape and dwarf plant stature. Wheat crop has exhibited a robust growth trend since the onset of the Green Revolution in 1968. In 2001 our farmers harvested nearly 74 million tonnes of heat, while the wheat harvest at the time of our Independence was only 6 million tonnes. Much of the increase in wheat production has come from productivity improvement.

The journey of wheat around the world has been slow, but once it took root it stayed and became a major agricultural and economic product for the people. World trade in wheat is greater than for all other crops combined. Demand of India's wheat in the world shows a rising trend. The country has exported 618020.01 MT of wheat to the world for the worth of Rs. 978.59 crores during the year of 2015-16. Wheat is grown mainly in two seasons in the world viz., winter and spring. Winter wheat is grown in cold countries like Europe, U.S.A., Australia, Russia Federation etc. while spring wheat is grown in Asia and a part of U.S.A. Spring wheat matures in 120-130 days while winter wheat takes 240-300 days for maturity.

Objectives of the Study

In this study the Scientometric analysis of the wheat research literature (2001-2016) from India. This study aims to collect the global output data in wheat in order to fix up the relative position of India while fulfilling the major objective of identifying the dimension of literature output in wheat research from India. The main objectives of the present study are as follows:

- To identify and analyze the exponential growth rate of research literature on wheat in Indian Contributions
- To analyze the top 10 countries on wheat literature.
- To analyze the language wise distribution on wheat literature.

- To analyze the source wise distribution on wheat research output.
- To analyze top 10 Authors Contribution on wheat Literature based on records output research.
- To identify the journal's contribution on wheat literature with their impact factors.
- To assess the Institution wise research concentration in wheat literature in India.

Methodology

The data has collected from the web of science database and using Hiscite Software for making on tables. For studying several parameters mentioned under the objectives, complete count method has been followed for the analysis of the data. The data was analyzed using the MS-Excel format with standardized formulas like using the percentage analysis only.

Data Analysis and Interpretations

The table shows that the year wise research productivity of wheat research during the study period. The year 2015 has the highest number of publications (10.35125%) followed by 2016 (9.978712%), 2014 (8.688132%) respectively. The year of 2002 has the lowest publication among the 16 years. The year 2007 has got the highest citation scores (8179) and the year 2016 has got very lowest citation scores (345).

Table Yearly Output on Wheat Research

S. No	Year of Publication	Records	Percentage	TLCS	TGCS	Rank
1	2001	290	3.858435	592	5168	14
2	2002	267	3.552422	536	5148	16
3	2003	283	3.765301	688	6327	15
4	2004	295	3.92496	708	5494	13
5	2005	306	4.071315	718	5165	12
6	2006	321	4.270889	800	6151	11
7	2007	456	6.067057	1209	8179	9
8	2008	486	6.466205	731	6385	8
9	2009	440	5.854178	714	5810	10
10	2010	528	7.025013	718	5780	6
11	2011	506	6.732304	611	5709	7
12	2012	550	7.317722	495	4883	5
13	2013	607	8.076104	401	4071	4
14	2014	653	8.688132	330	777	3
15	2015	778	10.35125	197	1516	1
16	2016	750	9.978712	39	345	2
	Total	**7516**	**100**	**9487**	**76908**	

Figure 1 Yearly Output on Wheat Research

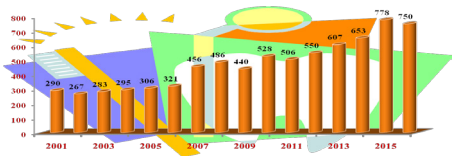


Table Top 10 Countries Output on Wheat Literature

S. No	Country	Records
1	India	6919
2	USA	310
3	Australia	163
4	Germany	119
5	UK	111
6	Mexico	81
7	Canada	80

8	Philippines	72
9	Peoples R China	62
10	Japan	60

Table shows that more than 100 Collaborated countries across the globe produced the wheat research during the study period. It is found that India, USA, Australia are three top nations having a collaborations with a outcome of 6919, 310 and 163 publications respectively.

Figure Top 10 Countries Output on Wheat Literature

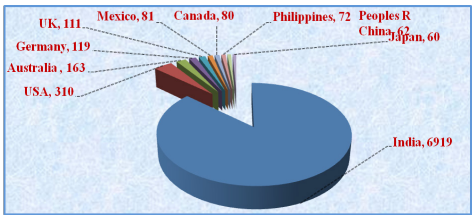


Table Language Wise Publication on Wheat Literature

S. No	Languages	Records	Percentage
1	English	7016	93.34753
2	Portuguese	255	3.392762
3	Spanish	119	1.583289
4	French	42	0.558808
5	Japanese	19	0.252794
6	Polish	17	0.226184
7	Chinese	14	0.186269
8	German	13	0.172964
9	Italian	7	0.093135
10	Korean	5	0.066525
11	Malay	4	0.05322
12	Turkish	3	0.039915
13	Czech	1	0.013305
14	Dutch	1	0.013305
	Total	**7516**	**100.00**

The above table reveals that the languages of publications. The research literature output in wheat during the period of coverage was found to be in 14 languages among which English was predominant with 7016. Remaining 500 records published in other than English language. English proved to be scientific community engaged in wheat research in India.

Figure Language Wise Publication on Wheat Literature

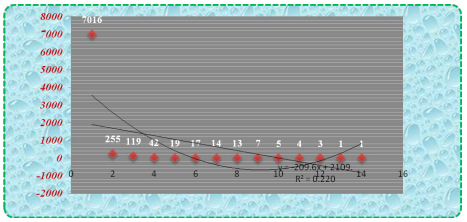


Table Source Wise Distribution on Wheat Research Output

S. No	Document Types	Records	TLCS	TGCS
1	Articles	6386	8376	66787
2	Unknown	500	247	0
3	Reviews	236	329	7101
4	Article; Book Chapter	113	19	219
5	Article; Proceedings paper	101	272	1567
6	Proceedings paper	76	1	21
7	Review; Book Chapter	27	154	1006
8	News Items	21	12	35
9	Editorial Material	19	46	116
10	Meeting Abstract	12	0	1
11	Correction	10	19	27
12	Letters	8	11	23
13	Editorial Material; Book Chapter	5	1	3
14	Article; Retracted Publication	1	0	2
15	Retraction	1	0	0
	Total	**7516**	**9487**	**76908**

The above table clearly shows that the document wise distributions of publications on wheat research. Those documents are classified into 15 categories according to the nature of publication. Most prevalent form of publication is Articles with the 6386 records. Note as a source of unknown second place in the order to the 500 records and followed by Reviews 236, Article; Book Chapter 113, Article; Proceedings paper101, Proceedings paper 76, Review; Book Chapter 27 and News Items 21, Editorial Material 19, Meeting Abstract 12, Correction 10, Letters

8, Editorial Material; Book Chapter 5, Article; Retracted Publication 1 and Retraction 1.

Figure Source Wise Distribution on Wheat Research Output

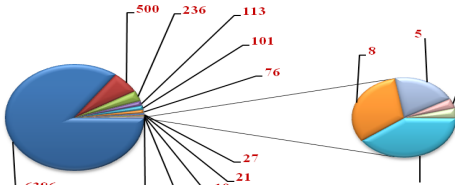


Table Top 10 Authors Contribution on Wheat Research

S.No	Author	Records	TLCS	TGCS
1	Kumar S	243	350	1496
2	Kumar A	229	204	1164
3	Singh S	182	324	1622
4	Singh R	156	192	1109
5	Singh B	124	204	1385
6	Singh A	111	134	1137
7	Singh A K	110	154	682
8	Sharma S	106	164	1002
9	Singh D	104	164	1118
10	Kumar V	100	281	1005

The analysis of the above table is author's productivity on wheat research. There are very few prolific authors who have published a moderate number of publications. Of which, Kumar S participated in a maximum of 243 records, Kumar A participate a records count of 229, Singh S with a records count of 182 respectively for the study period.

Figure Top 10 Authors Contribution on Wheat Research

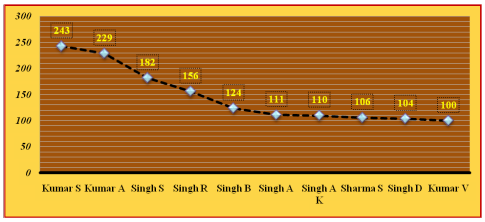


Table Wheat Research on Top 10 Journals Publications

S. No	Name of the Journal	Records	TLCS	TGCS
1	Indian Journal of Agricultural Sciences	494	380	917
2	Journal of Food Science and Technology-Mysore	243	165	770
3	Indian Journal of Animal Sciences	168	62	250
4	Indian Journal of Genetics and Plant Breeding	128	64	86
5	Current Science	121	231	1185
6	Field Crops Research	118	364	2021
7	Journal of Agro meteorology	117	40	78
8	Indian Journal of Agronomy	110	160	314
9	Communication in Soil Science and Plant Analysis	109	52	304
10	Bioresource Technology	108	293	3111

Total of 1716 journals were published in Wheat Research during the study period. Among the output, India has formed the core list10 journals. Among the journals, Indian Journal of Agricultural Research with 494 papers with the Total Global Citation Score was 917. Second in the ranked order was Journal of Food Science and Technoloty-Mysore with a 243 Papers, next by Indian Journal of Animal Sciences with 168 papers.

Figure Wheat Research on Top 10 Journals Publications

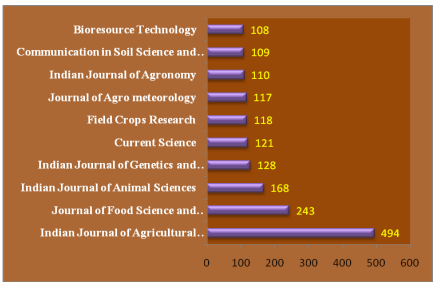
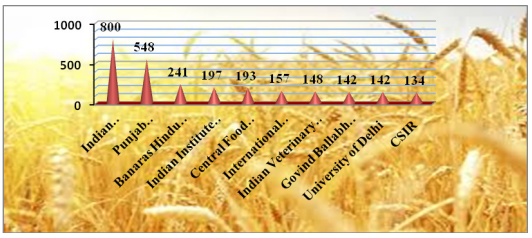


Table Top 10 Institutions' Contribution on Wheat Research

S. No	Name of the Institution	Records	TLCS	TGCS
1	Indian Agricultural Research Institute	800	1618	9812
2	Punjab Agricultural University	548	1087	5397
3	Banaras Hindu University	241	754	4520
4	Indian Institute of Technology	197	289	3911
5	Central Food Technology Research Institute	193	394	2532
6	International Crop Research Institute for Semi Arid Trop	157	181	3143
7	Indian Veterinary Research Institute	148	173	859
8	Govind Ballabh Plant University Agriculture and Technology	142	173	1156
9	University of Delhi	142	261	2002
10	CSIR	134	177	2165

Table 7 indicates that the institution wise research activity in the field of Wheat Research output. The first 10 higher publications take by priority of their highest research output institutions only. It could be observed that 'Indian Agricultural Research Institute' have the high 800 records productivity of this field during the study period with 1618 TLCS and 9812 TGCS measured. This is followed by 'Punjab Agricultural University' 548 records with 1087 TLCS and 5397 TGCS and 'Banaras Hindu University' 241 records with 754 TLCS and 4520 GCS respectively.

Figure Top 10 Institutions' Contribution on Wheat Research



Conclusion

The study certainly make awareness to general public knows about wheat production its importance to consider and for what purpose is it necessary. The level of knowledge scientists consider members of the public should have often at chances with what they really involved in learning. Hence, research desires to be conducted to resolve the modern situation of society perceptive of wheat production. Wheat research in India has shown the importance of understanding the Agricultural for the sustainable development. Based from this analysis the research productivity of wheat is a regular growth during 2001- 2016. 44.64 percent of research publication contributed by top three authors. Journal Article has the dominating documentation source than others. The average of exponential growth rate is eighty five percent. The organization of Indian Agricultural Research Institute has contributed 800 records and the journal Indian Journal of Agricultural Sciences 494 records during the study period.

References

Arunachalam, S. and Singh, UN. "Sophisticated Science in a Small Country: A Scientometric Analysis of Superconductivity Research in Israel." *Journal of Information Science,* vol. 10, no. 4, 1985, pp. 165-171.

Balasubramani. R and Gunasekaran, M. "Scientometric Analysis of Artificial Intelligence Research Output: An Indian Perspective." *European Journal of Scientific Research*, vol. 70, no. 2, 2012, pp. 317-322.

Baskaran, C. "Research Productivity of Enzymes Literature: A Scientometrics Study." *International Journal of Library Science and Information Management (IJLSIM)*, vol. 1, no. 2, 2015, pp. 17-25.

Jayashankar, R, Babu, BR and Rajendran, P. "Research Output of CSIR-Central Electro Chemical Research Institute (CECRI): A Study." *Annals of Library and Information Studies*, vol. 58, no. 4, 2011, pp. 301-306.

Kavitha, M and Arumugam, J. "Scientometric Analysis of Indian Contribution to Mathematical Research." *International Conference on Trends in Knowledge and Information Dynamics*, vol. 1, 2011, pp. 179-188.

Subbaiah, A, Singh Udai, N, Rita, S. "The Sleeping Dragon Wakes Up: A Scientometric Analysis of the Growth of Science and the Usage of Journals in China." *Current Science,* vol. 65, no. 11, 1993, pp. 809-822.

Swarna, T., Kalyane, V.L. and Kumar, V. "Scientometric Dimensions of Technical Reports from Bhabha Atomic Research Centre." *Malaysian Journal of Library & Information Science*, vol, 7, no. 1, 2002, pp. 17-30.

Thanuskodi, S. "Journal of Social Sciences: A Bibliometric Study." *Journal of Social Science*, vol. 24, no. 2, 2010, pp. 77-80.

Thanuskodi, S. "Bibliometric Analys is of the Indian Journal of Chemistry." *Library Philosophy and Practice*, 2011.

Author Details

S. Sudhahar, *Assistant Librarian, Thiagarajar College of Engineering, Madurai, Tamil Nadu, India*,
Email ID: *sudhahar@tce.edu.*

S. Kishore Kumar, *Deputy Librarian, Alagappa University, Karaikudi, Tamil Nadu, India.*